Intelligent Email Application

Users:

- User
  The term 'user' refers to members of the general public that use the 'Intelligent Email Application'. The user may want to ask a question or select from the various screens that display information (FAQ, links, etc.).
- Subject-Matter Expert
  The subject-matter experts are users that have been authorized to answer questions posted by the user.

  > **Comment:** The subject matter expert can answer questions for a specific subject area(s) for which he is an expert. In other words, he/she cannot answer questions on ANY subject area. This corresponds to the definition of "Maintenance User" below.

- Maintenance User
  The maintenance users are users that have been authorized to maintain the APHIS taxonomy. Each question that is asked by a user must be related to a 'subject'. The list of possible subjects is determined and maintained by the maintenance users. These users also update the system to associate a subject with a subject-matter expert. If the maintenance user is adding a subject-matter expert, the maintenance user may need to create the proper permissions for the new subject-matter expert. That is, the subject-matter expert must be granted the proper role. Also, any required user id/password must be created and sent to the subject-matter expert.

Roles:

- Expert
  The expert role will enable the subject-matter experts to enter the screens that enable these experts to answer questions that have been posted by the users.

  > **Comment:** Picky, I know! But the subject matter expert can only answer questions posted by a user about a specific subject area(s).

  The role of expert will be composed of various sub-roles. When a user asks a question via the 'Intelligent Email Application', it is necessary that a user specify a subject to which the question pertains. One or more subject-matter experts are assigned to a subject. Therefore, there must be various roles within the role of expert to identify the experts that have been assigned to a subject or a specific area of knowledge.

  It is also possible that an expert can be responsible for more than one subject. Therefore, an expert might belong to more than one role that is a subgroup of the expert role.

  > **Comment:** Good!

- Maintenance
  The maintenance role will include all maintenance users. If the user has the maintenance role, the user will be allowed to enter the screens that allow manipulation of the subjects and corresponding subject matter experts.

Screens:

1. Ask An Expert
   Purpose:
   The user asks a question to the subject-matter expert.

   > **Comment:** Can the expert nominate a question to be included in the FAQ? If he/she does nominate a question, should it be screened by a "super" maintenance user, or should the Subject Matter Expert have the final say in this?

2. Expert Responds
    (Authorized Access Only) *
    Purpose:
    The authorized subject-matter expert answers the question.

3. View Questions/Responses
    Purpose:
    The user is presented with a listing of all questions and responses.

4. Additional Links
    Purpose:
    The user is presented with a listing of additional links per subject.

5. Maintenance
    (Authorized Access Only) *
    Purpose:
    An authorized maintenance user can change the subject list. The user can add a subject and the corresponding contact, modify the contact information for an existing subject, or remove a subject from the active list of subjects.

*   The screens that have been marked "Authorized Access Only" would be restricted to authorized users only. When a user selects these screens for the first time, the user will be presented a logon screen. Once the user enters user id/password, the program will determine the role to which the user belongs. If the role is appropriate for the requested form, the user will then be presented with the requested form. The role will be stored within the program session information, avoiding the need to logon for subsequent entries to the screen.

For now the user id/password/role for the users doing maintenance must be pre-entered in a database table. When a member of this group makes a change, then the program will create a user id/password for the experts and automatically email the logon information to the experts.

In the future the information for special-access-users should be stored in LDAP rather than a database table. Also, permissions should be determined by utilizing security parameters specified in the web.xml file.

Comment: Good!

More in depth review of screen options:

1. Ask an Expert
    The basic form was copied from a form for **Centers for Disease Control and Prevention**. An example of this form was posted on the web. The user enters a question that is submitted to the subject-matter-expert via email.

    The following will be accomplished programmatically:

- Question will be added to the database.
- Question will be sent to the expert via email.
- User will receive a confirmation email.
- User email address will be saved.

Information Required:
- Listing of all subjects.
- Listing of all experts for subjects and email address.

Form Requirements:
The user must enter an email address. Later, when an expert responds to the question via the web interface, the email address entered by the user will be pre-filled in the email containing the response. Once the response has been sent by the expert, the email address will no longer be saved.

Since the email address will be mandatory, no other information about the user needs to be supplied by the user. That is, the fields for name, title/occupation, organization, address, and telephone number can be removed from the form.

The user must enter a question.

The user must specify a subject.

The subject will be provided to the user through a pick-list that has been populated from the database. The entries in this table have been created by the individuals that determine the APHIS taxonomy.

The problem with this approach is that users may not be able to properly interpret the APHIS taxonomy. The user needs to be able to select a subject with a terminology that the user understands. It is also possible that the user might want to suggest new entries to be considered for the taxonomy. It is necessary that the user be able to provide this 'insight' to new areas of the taxonomy.

Alternatives:

- The field entitled 'Other' is removed from the form. The user is forced to select a field from the subject pick-list.

  To alleviate the problem mentioned above, the user is provided with a facility to contact the proper individuals that can offer assistance to the user. If the user does not understand the terminology used in the taxonomy, the user will be presented with a list of contact information for librarians or a help desk that can assist the individual with learning the APHIS taxonomy. However, if the user would like to provide input on the current taxonomy, the user will be supplied with a contact list of the

individuals in the group that determine the taxonomy. The taxonomy experts have the proper permissions to modify the taxonomy accordingly.

Another possibility is that the user could be provided with an additional field labeled 'Taxonomy Comments'. These comments could be forwarded to the individuals in the taxonomy group for evaluation and subsequent action.

- The field entitled 'Other' remains on the form. Should the user prefer to not select a subject from the pick-list, then the user can enter a free-form subject in the field entitled 'Other'. This approach would allow the user to enter a new value for the subject. Regardless of the value entered by the user, a default group of experts will always be notified of the question.

The positive side to this approach is that the user can specify the subject text that the user feels is the most accurate for the question being submitted. Unfortunately, this approach also presents some difficulties.

Firstly, when the user enters additional information into the 'Other' field, this information will be sent to the subject-matter specialist as the subject. This information on taxonomy is being sent to subject-matter experts who do not have the power to modify the taxonomy.

Secondly, all submitted questions that have data entered in the 'Other' field will be forwarded to a group of experts in the default role. These experts will then forward the request to the proper group of experts. This forwarding process could be time consuming. As the system is presently designed it is not possible to keep track of the forwarding of requests.

Thirdly, the experts that process the question need to determine the proper subject for the question. They must be given the ability to modify the subject of the question. This process causes many difficulties with the structure of the application. If this option is chosen then the other screens must be reevaluated.

2. Expert Responds
   (Authorized Access Only)

Upon entry to the screen, the expert will be challenged to enter user id/password to verify authorized access. If this information was entered previously, then this screen will be skipped. At this point the expert will be presented a pick-list of all outstanding questions for the subject(s) for which the expert is designated that have not yet been answered. Also, a response field will be supplied for data entry. It is mandatory that the expert select a question from the pick-list and enter a response.

The following will be accomplished programmatically:
- Response will be added to the database.
- Response will be sent to the user via email.
- The user email address will no longer be saved.

3. View Questions/Responses
By default the user will be provided a list of all questions/responses. However, the user will be able to select from various pick-lists in order to limit the size of the list. The user can select a specific subject or role.

As it is possible for a maintenance user to make a subject inactive, should only active subjects be displayed?

4. Additional Links

Information Required:
- Listing of links by subject.

5. Maintenance
(Authorized Access Only)

Upon entry to the screen, the maintenance-user will be challenged to enter a user id/password to verify authorized access. If this information was entered previously, then this screen will be skipped.

Possible maintenance:
- Add a subject and corresponding role/experts

  The following will be accomplished programmatically:
  - The subject and associated role entered by the maintenance user will be added to the database.
  - If the experts to be included within the new role are not already in the database, the experts will be added to the database.
  - A user id/password will be generated for each expert added to the database.
  - The user id/password will be emailed to each expert added to the database.

- Modify the experts for an existing role

  The maintenance user will be allowed to add experts, delete experts, or modify expert information (i.e. email).

- A subject can be marked as no longer active.

This means that the subject will no longer be displayed in the subject pick-list presented to the user on the 'Ask an Expert' screen.

If the subject becomes inactive, should the corresponding role/subject-matter experts become inactive as well? This would mean that the expert might not be able to respond to a question since the proper privileges have been revoked. It is preferable that the users remain unchanged. The

Information Required:
- Listing of all maintenance users and email address.

Additional Programmatic Functionality:
For outstanding questions, the program can determine the amount of time that has elapsed since the questions were posted. Should this calculated time exceed some predetermined time limit, the program will notify the appropriate experts via email.

The appropriate time limit will be established after discussions with LPA.

Unaddressed Issues:
FAQ
Who is responsible for adding/deleting questions/answers in table?

The decision of what questions to include in a FAQ should be made by the subject-matter experts. Individuals in this group are best suited to review the questions using their knowledge as a guideline. The experts may also determine to add questions that they know will be forthcoming. Also, after a question becomes obsolete, it might be necessary to remove questions from the FAQ.

Should this be a subset of existing questions/answers?

If the FAQ is nothing more than a subset of the questions/answers that have been entered using the 'Intelligent Email Application', then it is merely a matter of adding a screen that displays all questions/answers that have been indicated as being selected for the FAQ. An additional screen can be made available to the subject-matter experts that will enable them to select the questions that are to be displayed in the FAQ.

Is this a separate application?

If it is determined that the FAQ is a separate set of questions from those created in the "Ask an Expert' section of the Intelligent Email Application', then it is possible that the FAQ functionality should be separated into a different application. This application could be accessed from a link or a button from the 'Intelligent Email Application'. The FAQ application would have a separate table that contains the questions/answers. The

Comment: Good question. We will have to discuss this one.

Comment: I think this will evolve to be several apps. First, the database you develop may be the master taxonomy database. When other apps need this information, they can reference your database or replicate the database. Second, the database of questions and responses can be used to generate the FAQ. This could possibly be done by flagging a question and response as a FAQ in the database. The FAQ could then be generated on the fly by subject area.

FAQ application would require the role information available to the 'Intelligent Email Application'.

The FAQ application would present screens to the subject-matter experts to add/delete questions from the FAQ. Also, the FAQ application would enable the users to display the FAQ.

If it is determined that it is not a separate application, then some thought needs to be given to the organization and display of the screens so that the purpose of each screen is clear to the user.

Modifications:
As per discussion of the Web Steering group on August 5, the taxonomy supplied will be different than described in this paper. This paper has assumed that a pick-list would be supplied for the subject as in the sample form **Centers for Disease Control and Prevention.** After our discussions it has been determined that the taxonomy will contain subcategories. Kathleen was going to discuss this matter and other matters as well with James Ivy in LPA. Once these discussions have taken place this paper will be updated with the appropriate changes.

Comment: General Comment: We need to find out if this knowledge mapping is happening elsewhere in the Agency. If so, where are they capturing the data? I have a feeling it is in Lotus Notes. If this is indeed occurring, then we will need to determine how to extract that information for our purposes. Plus, I cannot imaging APHIS personnel jumping into this and declaring their expertise. This may need some push from above.